

# AMPROBE®

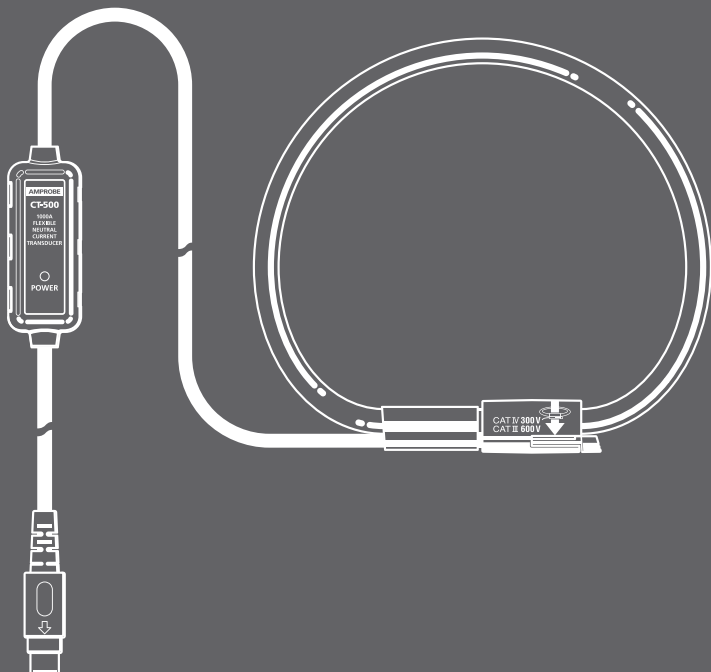
HARD AT WORK SINCE 1948.

## CT-500

### 1000 A Flexible Neutral Current Transducer

## Instruction Manual

- Manual de usuario
- Manuel de l'utilisateur



### **Limited Warranty and Limitation of Liability**

Your Amprobe product will be free from defects in material and workmanship for one year from the date of purchase unless local laws require otherwise. This warranty does not cover fuses, disposable batteries or damage from accident, neglect, misuse, alteration, contamination, or abnormal conditions of operation or handling. Resellers are not authorized to extend any other warranty on the behalf of Amprobe. To obtain service during the warranty period, return the product with proof of purchase to an authorized Amprobe Service Center or to an Amprobe dealer or distributor. See Repair Section for details. THIS WARRANTY IS YOUR ONLY REMEDY. ALL OTHER WARRANTIES - WHETHER EXPRESS, IMPLIED OR STATUTORY - INCLUDING IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY, ARE HEREBY DISCLAIMED. MANUFACTURER SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, ARISING FROM ANY CAUSE OR THEORY. Since some states or countries do not allow the exclusion or limitation of an implied warranty or of incidental or consequential damages, this limitation of liability may not apply to you.

### **Repair**

All Amprobe returned for warranty or non-warranty repair or for calibration should be accompanied by the following: your name, company's name, address, telephone number, and proof of purchase. Additionally, please include a brief description of the problem or the service requested and include the test leads with the meter. Non-warranty repair or replacement charges should be remitted in the form of a check, a money order, credit card with expiration date, or a purchase order made payable to Amprobe.

### **In-warranty Repairs and Replacement – All Countries**

Please read the warranty statement and check your battery before requesting repair. During the warranty period, any defective test tool can be returned to your Amprobe distributor for an exchange for the same or like product. Please check the "Where to Buy" section on [www.Amprobe.com](http://www.Amprobe.com) for a list of distributors near you. Additionally, in the United States and Canada, in-warranty repair and replacement units can also be sent to an Amprobe Service Center (see address below).

### **Non-warranty Repairs and Replacement – United States and Canada**

Non-warranty repairs in the United States and Canada should be sent to an Amprobe Service Center. Call Amprobe or inquire at your point of purchase for current repair and replacement rates.

## **CT-500 1000 A Flexible Neutral Current Transducer**

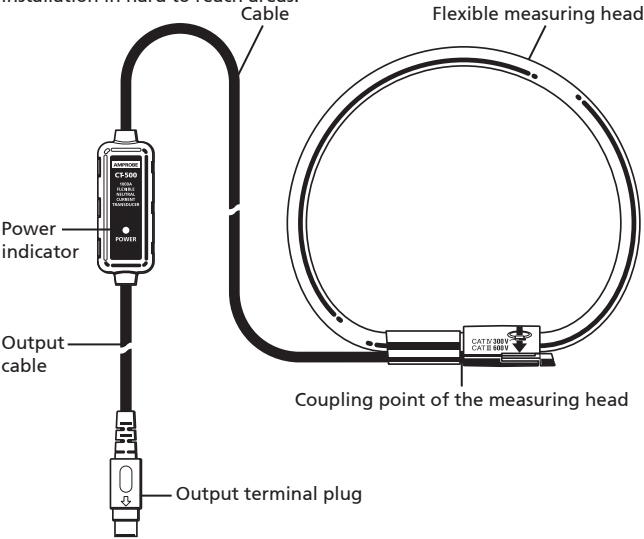
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### **CONTENTS**

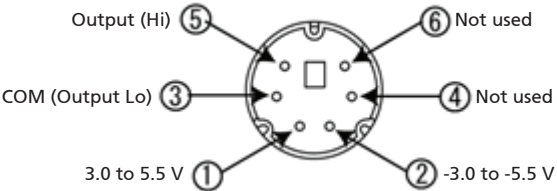
<b>INTRODUCING THE CT-500 .....</b>	<b>2</b>
<b>SYMBOL .....</b>	<b>3</b>
<b>SAFETY INFORMATION .....</b>	<b>3</b>
<b>MEASUREMENTS .....</b>	<b>5</b>
<b>MAINTENANCE .....</b>	<b>7</b>
<b>SPECIFICATIONS .....</b>	<b>8</b>

# INTRODUCING THE CT-500

The CT-500 Flexible Neutral Current Transducer is an optional accessory that is used to measure current on the Amprobe DM-5 Power Quality Analyzer. The flexible and lightweight measuring head allows for quick and easy installation in hard to reach areas.












## Pins of output terminal



Output signal is between pin 3 and 5.  
The measuring head is powered via pin 1 and 3 (3.0 to 5.5 Vdc) and pin 2 and 3 (-3.0 to -5.5 Vdc).  
Connecting terminal on DM-5 is symmetrical to above pin configurations.

## SYMBOLS

	Do not apply around, or remove from, HAZARDOUS LIVE conductors.
	Caution! Risk of electric shock.
	Caution! Refer to the explanation in this manual.
	Alternating current (AC).
	The equipment is protected by double insulation or reinforced insulation.
	Underwriters Laboratories (applies to Canada and U.S.A.)
	Complies with European directives.
	Conforms to relevant Australian standards
	Do not dispose this product as unsorted municipal waste. Contact a qualified recycler.

## SAFETY INFORMATION

The current transducer complies with:

- UL/IEC 61010-1, Measurement CAT III 600 V, CAT IV 300 V, Pollution degree 2
- IEC 61010-2-030
- IEC 61010-2-032
- EMC IEC 61326-1

### CENELEC DIRECTIVES

The instruments conform to CENELEC Low-voltage directive 2006/95/EC and Electromagnetic compatibility directive 2004/108/EC.

## **⚠ ⚠ Warning: Read before Using**

To ensure safe operation and service of the current transducer, follow these instructions:

- Read the operating instructions before use and follow all safety instructions.
- Use the current transducer only as specified in the operating instructions; otherwise the current transducer's safety features may be compromised.
- Adhere to local and national safety codes. Individual protective equipment must be used to prevent shock and arc blast injury where hazardous live conductors are exposed.
- Before each use, inspect the current transducer and its latching system for any damage. Pay particular attention to the insulation surrounding the flexible measuring head. Look for cracks or missing portions of the transducer housing or output cable insulation. Also look for loose or weakened components.
- Do not use a current transducer that is cracked, damaged, or has a defective cable.
- Never use the current transducer on a circuit with voltages higher than 600 V CAT III and 300 V CAT IV.
  - CAT III equipment is designed to protect against transients in equipment in fixed equipment installations, such as distribution panels, feeders and short branch circuits, and lighting systems in large buildings.
- De-energize the installation on which current will be measured or adopt safe operating procedures during application and removal of the current transducer.
- Use extreme caution when working around bare conductors or bus bars.
- Do not use the current transducer to measure bare conductors carrying a voltage from 30V up to 600V unless you are wearing protective clothing suitable for high-voltage work. Contact with the conductor could result in electric shock. Always use appropriate equipment for personal protection.
- Use caution when working with voltages above 60 V dc, 30 V ac rms or 42 V ac peak. Such voltages pose a shock hazard.
- Never apply the current exceeding the measuring range.
- Ensure that no foreign object obstructs the latching mechanism.
- Do not operate the current transducer around explosive gas, vapor, or dust.
- Do not step on or pinch the cord. It may damage the insulation.
- Do not expose the current transducer to direct sunlight, high temperatures/humidity or dew. It may cause deformation or insulation degradation.

## MEASUREMENTS

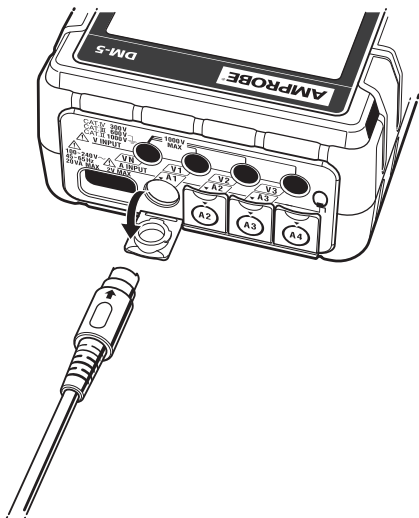
### **⚠ ⚠ Warning**

**To avoid electric shock or personal injury:**

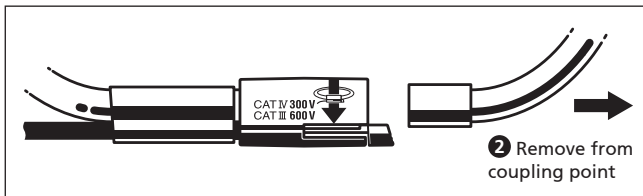
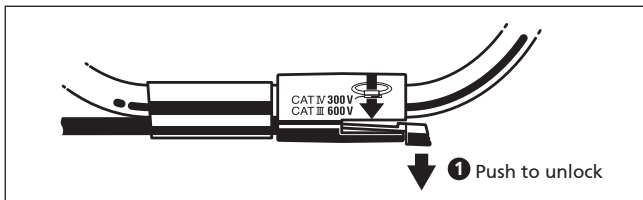
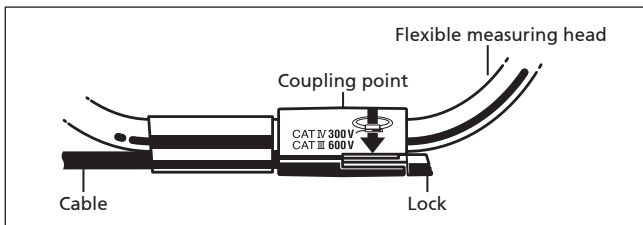
- Do not use the transducer on a circuit with voltages higher than 600 V CAT III and 300 V CAT IV.
- De-energize the installation on which current will be measured or adopt safe operating procedures during application and removal of the current transducer.
- Disconnect CT-500 from DM-5 by removing the CT-500 output terminal plug. Do not pull CT-500 output cable.

**To measure AC current:**

1. Connect CT-500 output terminal to DM-5 current input terminal (A1).  
Observe the arrow marks for correct connection.

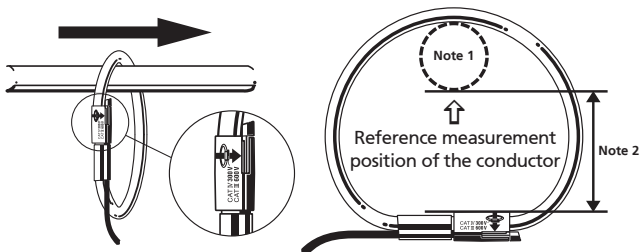


2. Power on DM-5 (unit auto-detects the current transducer connected).
3. Unlock the flexible measuring head according to the followings:



4. Connect the flexible measuring head around the conductor.
5. Make sure the arrow marked on the measuring head coupling points towards the current flowing direction of the conductor, and position the conductor under test as shown below.





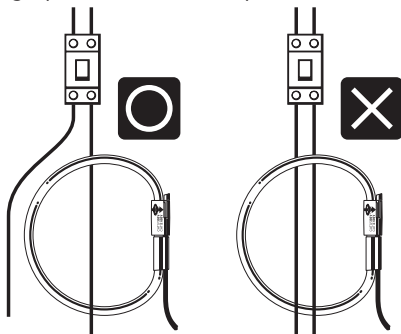
**Note 1:** Reference measurement position of the conductor. Maximum coupling diameter: 20 mm for published accuracy.

**Note 2:** Keep minimum 90 mm to ensure published accuracy.

6. Ensure the coupling point of the flexible measuring head is firmly locked.

### **⚠ Caution**

- The coupling point may disconnect if excessive pulling force is applied.
- Clamp onto one conductor only. Measurement cannot be made when clamping single-phase (2-wire) or threephase (3-wire) at the same time.



## MAINTENANCE

Before each use, inspect the flexible current transducer and its latching system for any damage for continued safety. Pay particular attention to the insulation surrounding the flexible measuring head.




The flexible current transducer and its latching system require no special care. Ensure that no foreign object obstructs the latching mechanism. Clean the CT-500 with a damp cloth and a mild detergent. Do not use abrasives, solvents, or alcohol.

**If CT-500 does not perform properly, use the following steps to help isolate the problem:**

- Inspect the coupling system for any damage. If a foreign material is present, the coupling system will not close properly and errors will result.
- Inspect the cables between the flexible measuring head and CT-500 circuit box. Also inspect between CT-500 circuit box and DM-5 for any damage.
- Check the power ON LED on the circuit box is ON.
- Verify the transducer setting on DM-5 is correct.

## SPECIFICATIONS

Current range	1000 A AC rms
Output voltage	500 mVac / 1000 Aac (0.5 mV / A)
Measuring range	0 to 1000 A (1850 Apeak)
Conductor size	Ø20 mm (0.787 in) maximum for published accuracy
Accuracy (sine wave)*	$\pm 0.8\% \pm 0.2 \text{ mV}$ (45 Hz to 65 Hz) $\pm 1.5\% \pm 0.2 \text{ mV}$ (40 Hz to 1 kHz)
Phase characteristics	45 Hz to 65 Hz within $\pm 2^\circ$ 40 Hz to 1 kHz within $\pm 3^\circ$
Working voltage	600 Vac rms
Max allowed input	1300 Aac continuous
Possible measurable conductor size	Max. Ø110 mm diameter (accuracy error not specified)
Head circumference	400 mm (15.75 in)

<b>Head cable diameter</b>	8.5 mm (0.33 in)
<b>Cable length (head to electronics)</b>	Approx. 2.7 m (8.56 ft)
<b>Cable length (output cable)</b>	Approx. 0.2 m (0.66 ft)
<b>Output terminal</b>	Mini-DIN-6 connector
<b>Output impedance</b>	100 $\Omega$ or less
<b>Current consumption (at power supply 5 V)</b>	Max. 2 mA (typical)
<b>Operating temperature and humidity</b>	14°F to 122 °F (-10 °C to 50 °C), $\leq 85$ %RH (no condensation) Guaranteed accuracy at 73 °F $\pm$ 9 °F (23 °C $\pm$ 5 °C), $\leq 85$ %RH (no condensation)
<b>Storage temperature and humidity</b>	-4 to 140 °F (-20 °C to 60 °C), $\leq 85$ % RH (no condensation)
<b>Operating altitude</b>	0 to 2000 m
<b>EMC</b>	EN 61326-1
<b>Safety compliance</b>	UL/IEC 61010-1, IEC 61010-2-030, IEC 61010-2-032 Measurement CAT III 600 V, CAT IV 300 V, Pollution degree 2
<b>Certification</b>	  
<b>Weight</b>	Approx. 180 g (0.4 lb)

\* See Note 1 and Note 2 on page 7 for reference measurement position of the conductor